IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claim 1 (Currently Amended): A simulation method for simulating a behavior of a mechanism of a mechanical device that is regulated by a mechanism control software along a time axis ~~on the basis of description data using a hybrid model of the mechanical device~~, comprising:

parsing ~~the description data to extract a description of continuous system equations, a description of switching of the continuous system equations upon state transition, and a description of an additional process other than any process relating to the continuous system equations~~ a source program of a hybrid model of the mechanical device, the source program including:

a first source code defining in a hybrid model language occurrences of first and second events,

a second source code defining in the hybrid model language continuous system equations that are activated or deactivated upon occurrence of the first event,

a third source code defining an additional process which is called when the second event is occurred;

generating ~~a first program on the basis of the extracted description of the continuous system equations~~ from the second source code a fourth source code of a model equation registration program which converts data structures of all the continuous system equations into tree structures as internal data expressions;

generating ~~a second program on the basis of the extracted description of the switching~~ from the first source code a fifth source code of an event control program which calls a

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function of activating or deactivating the continuous system equations when the first event is

occurred, and calls the additional process when the second event is occurred;

generating ~~a third program on the basis of the extracted description of the additional~~

~~process~~ from the third source code a sixth source code of additional processing program

which is called in the event control program;

~~converting, by executing the first program, data structures of all the continuous~~

~~system equations into tree structures as internal data expressions that allow execution of a~~

~~simulation;~~

~~starting a simulation of the mechanism after a completion of converting the~~

~~continuous system equations;~~

~~switching, by executing the second program, the converted continuous system~~

~~equations to activate appropriate one of the converted continuous system equations and~~

~~deactivate another instead, in response to occurrence of a first event that is detected by the~~

~~second program;~~

executing a model equation registration program based on the fourth source code;

executing an event control program based on the fifth source code at each time step

upon execution of a simulation;

executing the simulation to output data that expresses the behavior of the mechanism,

wherein [[the]]an activated one of the continuous system equations is solved by numerical

integration along the time axis, using ~~according to~~ the converted data structure~~, wherein the~~

~~data is supplied to the mechanism control software as a response to a control signal provided~~

~~from the mechanism control software~~; and

executing ~~the third program to execute the additional process in response to~~

~~occurrence of a second event that is detected by the second program~~ an additional processing

program based on the sixth source code, wherein a control signal including the data is exchanged to/from the mechanism control software.

Claim 2 (Cancelled).

Claim 3 (Currently Amended): The method according to claim 1, further comprising:

exchanging [[a]]the control signal with the mechanism control software through an input/output port in accordance with the thirdadditional processing program.

Claim 4 (Original): The method according to claim 1, wherein the first event contains an evaluation result of internal variables of the mechanism.

Claim 5 (Currently Amended): A computer readable storage medium storing instructions of a computer program for simulating a behavior of a mechanism of a mechanical device that is regulated by a mechanism control software along a time axis on the basis of description data using a hybrid model of the mechanical device, which when executed by a computer results in performance of steps comprising:

parsing the description data to extract a description of continuous system equations, a description of switching of the continuous system equations upon state transition, and a description of an additional process other than any process relating to the continuous system equationsa source program of a hybrid model of the mechanical device, the source program including:

a first source code defining in a hybrid model language occurrences of first and second events,

a second source code defining in the hybrid model language continuous system equations that are activated or deactivated upon occurrence of the first event,

a third source code defining an additional process which is called when the second event is occurred;

generating ~~a first program on the basis of the extracted description of the continuous system equations~~ from the second source code a fourth source code of a model equation registration program which converts data structures of all the continuous system equations into tree structures as internal data expressions;

generating ~~a second program on the basis of the extracted description of the switching~~ from the first source code a fifth source code of event control program which calls a function of activating or deactivating the continuous system equations when the first event is occurred, and calls the additional process when the second event is occurred;

generating ~~a third program on the basis of the extracted description of the additional process~~ from the third source code a sixth source code of additional processing program which is called in the event control program;

~~converting, by executing the first program, data structures of all the continuous system equations into tree structures as internal data expressions that allow execution of a simulation;~~

~~starting a simulation of the mechanism after a completion of converting the continuous system equations;~~

~~switching, by executing the second program, the converted continuous system equations to activate appropriate one of the converted continuous system equations and deactivate another instead, in response to occurrence of a first event that is detected by the second program;~~

executing a model equation registration program based on the fourth source code;

executing an event control program based on the fifth source code at each time step upon execution of a simulation;

executing the simulation to output data that expresses the behavior of the mechanism, wherein [[the]]an activated one of the continuous system equations is solved by numerical integration along the time axis, using according to the converted data structure, wherein the data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software; and

executing the third program to execute the additional process in response to occurrence of a second event that is detected by the second program an additional processing program based on the sixth source code, wherein a control signal including the data is exchanged to/from the mechanism control software.

Claim 6 (Cancelled).

Claim 7 (Currently Amended): The program product computer readable storage medium according to claim 5, storing further instructions which when executed by a computer results in performance of steps further comprising:

means for instructing the computer to exchange a exchanging the control signal with the mechanism control software through an input/output port in accordance with the thirdadditional processing program.

Claim 8 (Original): The computer readable storage medium according to claim 5, wherein the first event contains an evaluation result of internal variables of the mechanism.

Claims 9-20 (Cancelled).